AMENDMENT(S) TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in this application:

Listing of Claims:

1. (Original) In a process for the production of ethylbenzene from a dilute ethylene stream wherein an ethylene-containing stream derived from the cracking of a hydrocarbon feed is directed to an ethylene fractionator for separation of ethylene and ethane, an improvement comprising:

a) providing the dilute ethylene stream by

i. liquefying and separating out a portion of the ethylene-containing stream prior to directing the remainder of the ethylene-containing stream to the ethylene fractionator, and/or by

ii. drawing off a side stream from the ethylene fractionator; and,

b) directing said dilute ethylene stream as a feed to an alkylator for alkylation with benzene to produce ethylbenzene-containing effluent.

2. (Original) The process of Claim 1 wherein said cracking of a hydrocarbon feed is a thermal cracking process.

3. (Original) The process of Claim 2 wherein the hydrocarbon feed is selected from the group consisting of ethane, propane, butane, naphtha, gas oil, hydrocracked vacuum gas oil and combinations thereof.

4. (Original) The process of Claim 2 wherein the hydrocarbon feed is ethane or naphtha.

5. (Original) The process of Claim 1 wherein the dilute ethylene stream has an ethylene content of from about 60 mol% to about 85 mol%.

6. (Original) The process of Claim 1 wherein the dilute ethylene stream is provided by first separating out the portion of the ethylene-containing stream and then substantially totally condensing said separated portion to produce a liquefied dilute ethylene stream for use as the alkylator feed.

7. (Original) The process of Claim 6 wherein the dilute ethylene stream has an ethylene content of from about 80 mol% to about 83 mol%.

8. (Original) The process of Claim 1 wherein the dilute ethylene stream is provided by cooling the ethylene-containing stream sufficiently to partially condense the ethylene stream to provide a liquefied dilute ethylene stream for use as the alkylator feed and an uncondensed remaining portion of the ethylene-containing stream which is then directed to the ethylene fractionator as a vapor.

9. (Original) The process of Claim 8 wherein the dilute ethylene stream has an ethylene content of from about 72 mol% to about 78 mol%.

10. (Original) The process of Claim 1 wherein the dilute ethylene stream is provided as a liquid or vapor side draw from a stripping section of the ethylene fractionator.

11. (Original) The process of Claim 10 wherein the dilute ethylene stream has an ethylene content of from about 60 mol% to about 65 mol%.

12. (Original) The process of Claim 1 wherein the dilute ethylene stream is provided as a liquid or vapor side draw from a rectification section of the ethylene fractionator.

13. (Original) The process of Claim 12 wherein the dilute ethylene stream has an ethylene content of from about 82 mol% to about 85 mol%.

14. (Original) The process of Claim 1 wherein the ethane separated by the ethylene fractionator is recycled to a cracking zone.

15. (Original) The process of Claim 1 further comprising fractionating the ethylbenzene-containing effluent from the alkylator in a first fractionator to provide an overhead stream containing unconverted benzene and a bottom stream containing ethylbenzene.

16. (Original) The process of Claim 15 comprising recycling at least a portion of the overhead stream from the first fractionator to the alkylator.

17. (Original) The process of Claim 16 further comprising fractionating the bottom stream of the first fractionator in a second fractionator to provide an ethylbenzene overhead and a bottom stream containing polyethylbenzene.

18. (Original) The process of Claim 17 wherein the bottom stream of the second alkylator is fractionated in a third fractionator to provide a polyethylbenzene-containing overhead stream, and recycling the polyethylbenzene-containing overhead stream to a transalkylator for transalkylation with a portion of the unconverted benzene recycled from the first fractionator.

19. (New) A process for the production of ethylbenzene comprising the steps of:

a) cracking a hydrocarbon to provide an olefin-containing effluent;

b) separating out a C_2 component stream from the olefin-containing effluent;

c) removing acetylene from the C_2 component stream to provide a dilute ethylene stream containing ethylene and ethane;

d) separating the dilute ethylene stream into a first portion to be sent to an alkylator and a second portion to be fed to an ethylene fractionator to separate the ethylene and ethane components of the second portion;

e) condensing the alkylator feed to provide an alkylator feed stream; and

f) directing the alkylator feed stream to the alkylator for reaction with benzene to provide an ethylbenzene product.

20. (New) The process of Claim 17 wherein the separating step (b) is performed by distillation.

21. (New) A process for the production of ethylbenzene comprising the steps of:

a) cracking a hydrocarbon to provide an olefin-containing effluent;

b) separating out a C_2 component stream from the olefin-containing effluent;

c) removing acetylene from the C_2 component stream to provide a first dilute ethylene stream containing ethylene and ethane;

d) feeding the dilute ethylene stream to an ethylene fractionator to separate the ethylene and ethane components of the second portion;

e) drawing off a side stream from the ethylene fractionator to provide an alkylator feed stream; and

f) directing the alkylator feed stream to the alkylator for reaction with benzene to provide an ethylbenzene product.

22. (New) The process of Claim 21 wherein the side stream is withdrawn at a point below the feed point to provide an alkylator feed having an ethylene content less than that of the dilute ethylene stream fed to the ethylene fractionator.

23. (New) The process of Claim 21 wherein the side stream is withdrawn at a point above the feed point to provide an alkylator feed having an ethylene content higher than that of the dilute ethylene stream fed to the ethylene fractionator.